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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/617,828

07/14/2003

Akio Nagasaka

ASA-1141

5222

7590

11/08/2006

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EXAMINER

LAROSE, COLIN M

ART UNIT

PAPER NUMBER

2624

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/617,828	<b>Applicant(s)</b> NAGASAKA ET AL.	
	<b>Examiner</b> Colin M. LaRose	<b>Art Unit</b> 2624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 20-26 and 28-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25,26,28-31,37-43 and 45 is/are allowed.
- 6) ☒ Claim(s) 20-24,32-36,44,46 and 47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 August 2006 has been entered.

### ***Response to Amendments and Arguments***

2. The amendment to independent claim 20 does not overcome Miura because Miura is considered to disclose extracting vein features from images that are "generated using light irradiated by said two light sources" (i.e. Miura utilizes a first image generated using light from a first light bulb and a second image generated using light from a second light bulb, as shown in figure 5) and images that are "captured by the single image capture unit" (i.e. Miura utilizes images captured by a single image capture unit -- corresponding to any one of the four cameras shown in figure 5).

Therefore, the present amendment, which specifies that the plurality of images are generated using light from "two light sources," does not overcome Miura.

3. The amendment to independent claim 25 overcomes Miura because Miura's image capture unit (i.e. any one of the cameras in figure 5) captures images using only light from one side of the finger, and not two sides, as claimed. That is, each of Miura's cameras capture images

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generated using only a single corresponding light source. The cameras do not utilize more than one light source because the lights are alternately illuminated.

4. The amendment to independent claim 32, which is similar to that of claim 20, does not overcome Miura because Miura is considered to disclose extracting vein features from images that are "generated using light irradiated by said two light sources" (i.e. Miura utilizes a first image generated using light from a first light bulb and a second image generated using light from a second light bulb, as shown in figure 5). Therefore, the present amendment, which specifies that the plurality of images are generated using light from "two light sources," does not overcome Miura.

5. The amendment to independent claim 37 overcomes Miura because the claim now denotes that the images are captured by "said" single image capture unit -- this indicates that there is only one image capture unit that captures the images alternately irradiated by light from both sides of a finger. In contrast, the previously presented claim only required that a single image capture unit capture each image, but it did not preclude a plurality of "single" cameras from capturing each image.

Miura does not disclose such a limitation because in Miura's figure 5, each "image capture unit" captures images that correspond to the finger irradiated by a single illumination source. Miura does not show a single camera that captures images of a finger *when the finger is alternately illuminated from different sides by e.g. two opposing light sources*. Therefore, specifying that the images are captured by a *single* image capture unit overcomes Miura.

***Claim Objections***

6. In view of Applicant's amendments, the previous claim objections have been withdrawn.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 32-36 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claim 32 recites the limitation "the image capture unit" in the second-to-last line. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 20, 32, 44-45, and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication 2002/0028004 by Miura et al. ("Miura").

Regarding claim 20, Miura discloses a personal identification apparatus (figure 1) comprising:

two light sources (2) to irradiate light to a finger from two sides of the finger (see figure 5: at least two light sources 2 are disposed around the finger to illuminate at least the left and right sides of the finger);

a single image capture unit (4) to capture the light from the light sources transmitted through the finger (see also figure 5, where any one of the plurality of cameras is utilized as a single image capture unit); and

a processing unit (1, coupled with CPU 9) to cause the two light sources to irradiate the light alternately, and cause the image capture unit to capture a plurality of images at a timing of the irradiation of the light sources (see paragraph [0033]: “if interference among the light sources disturbs the received images, the light sources may be operated with time lags for consecutive imaging” – in other words, the light are alternately irradiated and the plurality of images are captured during the irradiation of the alternating light sources in order to eliminate interference among the images),

wherein the processing unit extracts a feature of a vein pattern of the finger from the plurality of images captured by the image capture unit and executes personal identification using the extracted feature (i.e. the CPU 9 processes the captured images to extract the vein patterns and identify an individual therefor – see figure 9).

Regarding claim 32 Miura discloses a personal identification apparatus (figure 1) comprising:

a light source part composed of two light sources (2) to irradiate light to a finger from two sides of the finger (see figure 5: at least two light sources 2 are disposed around the finger to illuminate at least the left and right sides of the finger);

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an image capture unit (4) to capture the light from the light sources transmitted through the finger (see also figure 5, wherein any one of the plurality of cameras is utilized as an image capture unit); and

a processing unit (1, coupled with CPU 9) to cause the two light sources to irradiate the light alternately, and cause the image capture unit to capture a plurality of images at a timing of the irradiation of the light sources (see paragraph [0033]: “if interference among the light sources disturbs the received images, the light sources may be operated with time lags for consecutive imaging” – in other words, the light are alternately irradiated and the plurality of images are captured during the irradiation of the alternating light sources in order to eliminate interference among the images),

wherein the image capture unit and the light source part are not opposite each other in a coaxial form (i.e. a single camera 4 and two non-corresponding light sources 2 are not opposite each other in coaxial form), and

the processing unit extracts a feature of a vein pattern of the finger from the plurality of images captured by the image capture unit and executes personal identification using the extracted feature (i.e. the CPU 9 processes the captured images to extract the vein patterns and identify an individual therefor – see figure 9).

Regarding claim 44, Miura discloses that the image capture unit and the light source part are not opposite each other in a coaxial form (i.e. a single camera 4 and two non-corresponding light sources 2 are not opposite each other in coaxial form).

Regarding claim 47, Miura discloses a single image capture unit to capture images by the light transmitted through the finger (i.e. any one of the plurality of cameras in figure 5 is utilized as an image capture unit).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 21, 33, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0028004 by Miura et al. ("Miura").

Regarding claims 21 and 33, Miura is unconcerned with whether a given region in any of the images is saturated or unsaturated. Therefore, Miura does not expressly teach that (1) the images have saturated regions, or (2) the feature of the vein pattern is extracted from unsaturated regions. Miura extracts the feature of the vein pattern by determining initial tracking points and then executing a tracking process on the basis of the initial points (see figure 13).

Regions that are saturated contain no identifiable information therein – i.e. the region is either maximally light or maximally dark and there are no midtones, contrasting lines, or edges from which to extract object information (i.e. features of a vein).

To the extent that saturated regions prevent the extraction of salient object information therefrom, Miura's extraction method attempts to extract a vein feature regardless of whether the feature lies in a saturated or unsaturated region. Miura extracts a feature from an unsaturated



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region on the basis of the feature being present therein, and not on the basis of the region happening to be unsaturated. Thus, the location of Miura's vein feature, and not the lightness characteristics of the region (saturated or unsaturated), determines which regions from which the feature will be extracted.

While there is no mention of Miura's extraction process being performed on "unsaturated" regions, those skilled in the art at the time of the invention would have known that Miura's extraction process extracts the feature from at least some regions that are unsaturated since saturated regions, per se, exhibit either maximal lightness or maximal darkness and contain no salient object information therein which can be extracted. In addition, the presence or absence of saturated regions among the plurality of images is dependent upon the specific implementation of the imaging and illumination apparatus, and the presence of saturated regions in the images has no bearing on the extraction process other than to hinder it. Therefore, the present amendment, which specifies that saturated regions are present in the images, is not considered to be a patentable distinction from Miura.

Regarding claim 46, Miura's light sources irradiate the light so as to cause saturated regions in the images, if any. Again, the presence of saturated regions is considered nothing more than a hindrance on the extraction process and depends upon the specific implementation of Miura and the environment in which the processes of illuminating and imaging a finger are carried out. The requirement that the light sources cause saturated regions in the images is not considered to render the claimed invention patentably distinct from Miura.

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14. Claims 23 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0028004 by Miura et al. ("Miura") in view of U.S. Patent Application Publication 2002/0048014 by Kono et al. ("Kono").

Regarding claims 23 and 34, Miura does not disclose measuring finger thickness and controlling the amount of light based on the finger thickness, as claimed.

Kono discloses a system for identifying an individual on the basis of vein patterns that is very similar to that of Miura. In particular, Kono teaches that when irradiating and imaging vein patterns of a finger, it is advantageous to control the amount of light impinging the finger so as to optimize the light intensity. Kono teaches that the light is advantageously varied according to the thickness of the finger. A plurality of LEDs are employed to detect the thickness of the finger and thereby select which light elements are to be turned on for illuminating the finger. See paragraph [0029].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Miura by Kono to measure the thickness of the finger and control the amount of light based on the thickness, since Kono teaches that such a technique of varying the amount of light based on the size of the finger is conventionally employed for the purposes of optimally imaging a finger in order to detect vein patterns therein. See paragraph [0029].

15. Claims 22 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0028004 by Miura et al. ("Miura") in view of U.S. Design Patent 382,862 by Nakayama et al. ("Nakayama").

Regarding claims 22 and 36, Miura does not expressly disclose a guide part for receiving the finger and causing it to arc, as claimed.

Nakayama discloses a conventional design for a finger-imaging apparatus. The apparatus includes a guide part that receives a finger to be imaged and causes the finger to arc, as shown in figure 2. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Miura by Nakayama to incorporate Nakayama's guide part since Nakayama teaches that a guide part for receiving a finger to be imaged that causes the finger to arc is a conventional design for a finger imaging apparatus.

16. Claims 24 and 35, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0028004 by Miura et al. ("Miura") in view of U.S. Patent 5,177,802 by Fujimoto et al. ("Fujimoto").

Regarding claims 24 and 35, Miura does not disclose a switch that activates the processing unit, as claimed.

Fujimoto discloses a finger imaging system that captures images of a finger in order to identify an individual, similar to the system of Miura. In particular, Fujimoto discloses an embodiment wherein a switch is depressed in order to activate personal identification (see figure 18). As shown in figure 18, when the fingertip depresses the switch 1003, the finger is in a position conducive to imaging the salient portions thereof.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Miura by Fujimoto to include a fingertip-activated switch that initiates personal identification when depressed since Fujimoto teaches that providing a switch for activation as

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claimed was a conventional technique utilized for the purposes of imaging a finger in a desirable orientation with "little positional slippage" (see column 17, lines 35-41).

*Allowable Subject Matter*

17. Claims 25-26, 28-31, 37-43, and 45 are allowed for the reasons given above.

*Conclusion*

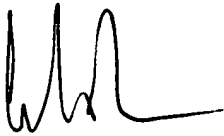
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (571) 272-7423. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000. Any inquiry of a general nature or relating to the status of this application or proceeding can also be directed to the TC 2600 Customer Service Office whose telephone number is (571) 272-2600.

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A handwritten signature in black ink, appearing to read 'Colin M. LaRose', with a stylized, cursive script.

Colin M. LaRose  
Group Art Unit 2624  
2 November 2006